



COMMENT ON HEIANZA ET AL.

## Effect of Postmenopausal Status and Age at Menopause on Type 2 Diabetes and Prediabetes in Japanese Individuals: Toranomon Hospital Health Management Center Study 17 (TOPICS 17). *Diabetes Care* 2013;36:4007–4014

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We read with great interest the article by Heianza et al. (1), which showed a higher probability of type 2 diabetes and prediabetes among postmenopausal women than among premenopausal women. It is also suggested that menopause and older age might additively influence the elevated probability of type 2 diabetes. Although not prospective in nature, the finding is important due to little evidence on this topic. The authors, however, seem to overlook some important issues. We would like to draw attention to several aspects.

In the study population, the mean age was 42 years and 57 years for premenopausal and postmenopausal women, respectively. When estimating probability of dysglycemia through a combination of age and menopausal status (Fig. 1 in ref. 1) in the age-group less than 50 years, the majority of premenopausal women were much younger than postmenopausal women. Thus, the higher odds for type 2 diabetes among postmenopausal women than premenopausal women (<50 years) may be due to the difference in age rather than menopausal status, and adjustment for current age could attenuate the association. The

same is also true when the authors assessed the association between premenopausal state and postmenopausal state by age at menopause (Table 3 in ref. 1). In a cohort study among Japanese women (2), menopausal status and age at menopause were not associated with diabetes risk after adjustment for chronological age.

One motivation of Heianza et al. was to explore possible explanations for higher prevalence of type 2 diabetes among women than men in older ages, citing two references in Chinese (3) and global populations (4). However, this may not be the case for the Japanese population. According to the National Health and Nutrition Survey in Japan, men have higher prevalence of diabetes than women even after age 60 years (5). Similarly, in the study by Heianza et al., men had a higher prevalence of type 2 diabetes than women. Thus, it remains unclear whether menopause itself or older age is a risk factor for type 2 diabetes among postmenopausal Japanese women.

We hope this article provides additional clarification regarding the ultimate goals of Heianza et al. (1) and

calls for further studies looking into whether menopausal status independently influences diabetes risk.

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### References

1. Heianza Y, Arase Y, Kodama S, et al. Effect of postmenopausal status and age at menopause on type 2 diabetes and prediabetes in Japanese individuals: Toranomon Hospital Health Management Center Study 17 (TOPICS 17). *Diabetes Care* 2013;36:4007–4014
2. Lee JS, Hayashi K, Mishra G, Yasui T, Kubota T, Mizunuma H. Independent association between age at natural menopause and hypercholesterolemia, hypertension, and diabetes mellitus: Japan Nurses' Health Study. *J Atheroscler Thromb* 2013; 20:161–169
3. Yang W, Lu J, Weng J, et al. China National Diabetes and Metabolic Disorders Study Group. Prevalence of diabetes among men and women in China. *N Engl J Med* 2010;362: 1090–1101
4. International Diabetes Federation. *Diabetes Atlas*. 6th ed. [Internet]. 2012. Brussels, International Diabetes Federation. Available from [http://www.idf.org/sites/default/files/EN\\_6E\\_Atlas\\_Full\\_0.pdf](http://www.idf.org/sites/default/files/EN_6E_Atlas_Full_0.pdf). Accessed 7 June 2013
5. Institute of Health and Nutrition. *The National Health and Nutrition Survey Japan, 2010*. Tokyo, Daiichi-shuppan, 2013 [In Japanese]